

# How It Works

## Smart Grid

Smart Grid refers to applications where electric utilities deploy information technology and operational technology onto the electric grid to improve its efficiency, reliability, security, sustainability and customer relations.

These applications include:

- Outage management
- Demand-side and load management
- Transmission and distribution automation
- SCADA and substation automation
- Automated metering
- Load profiling
- Distributed generation

Currently, no regulations require Smart Grid implementation; however, the Energy Independence and Security Act of 2007 urges states to consider Smart Grid requirements.

“While the overall vision for Smart Grid includes residential applications, many of the benefits of Smart Grid can be realized without extension to residential customers, since it is often true that a large percentage of a utility’s load exists with only a small percentage of its customers,” explains Jim Cupp, Burns & McDonnell telecommunications department manager. Initially targeting Smart Grid to applications and locations where the impact is maximized can offer the best cost-to-benefit ratio.

The challenge is building a communications infrastructure that connects all the utility’s components. Utilities can obtain it through a third party’s existing broadband connection with customers or by building a network of wireless, wire line or fiber optic cables. The former limits the utility’s control of communication to customers, while the latter

initially costs more. With the proper network infrastructure in place, utilities can obtain customers’ real-time load profile information. This knowledge allows the utility to develop programs to encourage energy conservation and load factor improvements to increase consumer savings.

A common challenge with Smart Grid is data management — how to effectively use the data gathered and translate it into relevant information that can be applied to more efficient, sustainable operations. “Successful data management,” says Tobias Whitney, senior project manager at Burns & McDonnell, “requires a collaborative approach from diverse disciplines including information technology, transmission and distribution.”

*For more information, contact Jim Cupp, (816) 822-3472.*